Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993	)	WT Docket No. 02-379
Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services	)	

REPLY COMMENTS OF THE CDMA DEVELOPMENT GROUP, INC. (CDG)

The CDMA Development Group ("CDG") hereby respectfully submits these reply comments in response to the Federal Communications Commission's (the "Commission") Notice of Inquiry ("NOI") concerning the above-captioned matter.[1]

I. INTRODUCTION AND SUMMARY

The CDG is a non-profit international consortium of over 110 companies, including the world's leading operators and manufacturers of digital cellular, personal communications services (PCS), and third-generation (3G) systems based on Code Division Multiple Access (CDMA) technology. The CDG's mission is to lead the rapid evolution and deployment of CDMA-based systems, based on open standards and encompassing all core architectures, to meet the needs of markets around the world in an emerging, information-intensive environment.

In these reply comments, the CDG is providing additional information regarding CDMA2000, particularly as we view the deployment of this 3G service as a major milestone for 2002 in the U.S. wireless industry. Additionally, the CDG has reviewed the

[1] In the Matter of Implementation of Section 6002(b) of the Omnibus Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, WT Docket No.02-379, released December 13, 2002 ("NOI").

comments filed in this proceeding and hereby provides some clarification to points raised by 3G Americas.[2]

II. CDMA2000 IS THE LEADING 3G TECHNOLOGY

CDMA2000 was the first 3G technology commercially deployed, in October 2000 in the Republic of Korea. Today, there are 38 commercial networks in 21 countries, including the United States, serving over 30 million users. The number of CDMA2000 subscribers is expected to increase rapidly with the additional deployment of systems throughout 2003.[3]

The experiences of CDMA2000 carriers suggest that advanced wireless services provide growth opportunities for the wireless industry and spur product development and innovation. 3G Americas comments to the Commission state that "wireless data has thus been limited to specific areas, including SMS, i-mode in Japan and wireless LANs in the US."[4] On the contrary, with the introduction of CDMA2000 services, operators have been able to offer a wide range of advanced data services through which they generate incremental revenue. In fact, CDMA2000 operators lead in delivering multimedia services such as picture distribution, live broadcasts and location-based services. Operators in Asia report a 100-250% increase in data ARPU (average revenue per user) and 10-15% increase in total ARPU.

III. 3G AMERICAS' COMMENTS

In their comments, 3G Americas noted several reasons why wireless operators should migrate to GSM. The CDG would like to take this opportunity to comment on some of these statements and to provide our perspective on the comparative advantages of the CDMA2000 migration path.

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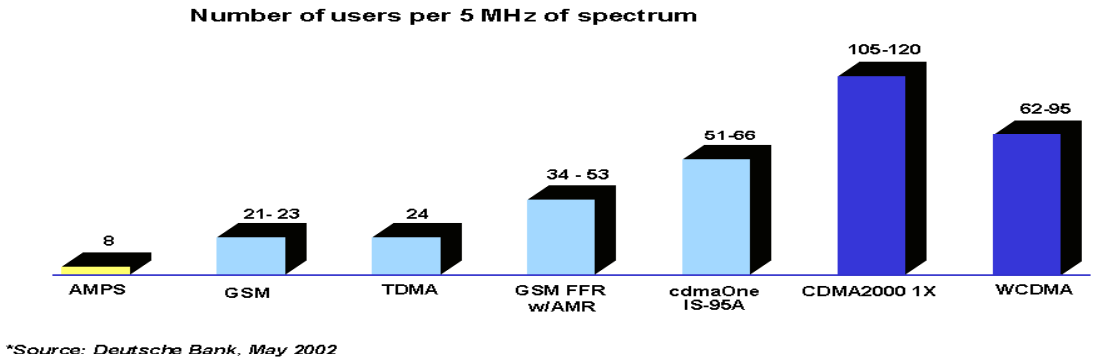
[2] See *3G Americas Comments,* ET Docket No. 02-379 (filed January 27, 2003).
[3] *CDMA2000: Market Facts*, CDG Press Release, January 2003.
[4] *3G Americas Comments,* p. 2.

1. *CDMA is the most spectrally efficient technology*

3G Americas' comments indicate that one of the key benefits of migrating from TDMA to GSM is the increased voice capacity. A chart included in the document compares voice capacity of GSM to other technologies and claims an advantage.[5] However, expert analysis and the experiences of operators from around the globe prove that cdmaOne™ and CDMA2000 are the most spectrally efficient technologies available. In addition, new technologies are being deployed today which will further enhance the capacity of CDMA networks, providing even more powerful benefits to current CDMA operators and those migrating from other technologies to CDMA2000.

The capacity superiority of CDMA systems has been well documented. For instance, Deutsche Bank has compared voice and data capacity of various air interface technologies in 5 MHz of spectrum.[6] On the voice side, cdmaOne (IS-95A) was shown to have higher voice capacity than TDMA, GSM, and even GSM with AMR, a vocoder technology developed to increase GSM capacity. Deutsche Bank estimated that the only technologies with expected higher voice capacity than cdmaOne (IS-95A) were WCDMA and CDMA2000 1X. In fact, CDMA2000 1X was estimated to have the highest capacity of all air interfaces, including WCDMA.



Source: Deutsche Bank, May 2002

[5] *3G Americas Comments*, p. 6.
[6] *The Rise of the 3G Empire,* by Deutsche Bank, May 2002.

Operators who have deployed CDMA2000 1X confirm this analysis. SK Telecom in the Republic of Korea reports its commercial use of CDMA2000 1X has boosted network capacity by 70%, to more than 231 Erlangs in 10 MHz of spectrum, and a U.S. operator has achieved 80% capacity gains on its CDMA2000 1X network. Such results on commercial networks allow CDMA2000 1X operators to provide quality service to high-density areas and build capacity now for anticipated traffic while minimizing capital expenditures.

There are a number of new technologies being deployed to further enhance the capacity of CDMA networks. Solutions such as Selectable Mode Vocoder (SMV), mobile diversity antennas for handsets, and smart antennas for networks will take CDMA's long-standing tradition of spectral efficiency to even greater heights.

SMV is a breakthrough technology providing capacity and quality gains on cdmaOne and CDMA2000 networks. SMV is designed to allow wireless operators to gain up to 75% more system capacity when using SMV's lower encoding rates while preserving high-quality voice delivery.

Mobile diversity antennas, a handset-based smart antenna methodology that requires no network modifications and will increase capacity by a factor of two, combine signals from two separate antennas to reduce the impact of spatial variations in signal strength and thus increase the average data rate available.

Network smart antennas, which do not require any changes to end-user mobile devices, can be embedded in base stations or added to existing networks as appliqué solutions. Such antennas can be deployed on a per-cell-site or per-sector basis in order to alleviate specific or localized capacity issues.

2. CDMA2000 delivers the highest data speeds today

3G Americas' comments discuss the capabilities of Enhanced Data Rates for Global Evolution (EDGE), which double GPRS capacity and triple data throughput. EDGE can theoretically offer a peak network data rate of 473 kbps with actual user data rates expected in the 80-130 kbps range.[7]

[7] *3G Americas Comments*, p. 7.

The CDG would like to clarify to the Commission that, while EDGE is not yet commercially available, and their data capabilities are still being debated in the industry, CDMA2000 is delivering high-speed data today. In commercial deployments, CDMA2000 1X provides average data throughput of 60-100 kbps with peak speeds of 153 kbps and CDMA2000 1xEV-DO supports speeds of 500-1,200 kbps with peak speeds of 2.4 Mbps. In contrast, commercial GPRS networks offer data speeds of only 20-40 kbps, with some research showing GPRS throughput as low as 10 kbps in the United States.[8] NTT DoCoMo's WCDMA network offers data throughput of 64 kbps.

In the future, CDMA2000 1xEV-DV will provide integrated voice and simultaneous high-speed packet data services, such as video, video-conferencing and other multimedia services, at speeds of up to 3.09 Mbps.

3. CDMA2000 offers a seamless and economical migration path to 3G for any 2G technology

3G Americas notes that "EDGE and WCDMA radio access networks can be combined in one seamless network to provide efficient narrowband and wideband data capabilities, using the same quality-of-service architecture."[9] The CDG believes that combining EDGE and WCDMA will require significant network overhaul, including a major upgrade to the core network and radio access, particularly as there are great differences between the frequency bandwidth requirements between the two systems. The CDG would also like to provide more information regarding migration paths to 3G in this proceeding. CDMA2000 offers 3G migration options for analog, cdmaOne, TDMA and GSM systems. The upgrade from cdmaOne to CDMA2000 1X requires only a single technological step, involving software modifications and the replacement of channel cards. The further evolution to CDMA2000 1xEV-DO requires the installation of a new channel card and a packet data support node (commercial router with modifications). Since the migration builds on existing core radio equipment, existing CDMA base stations remain in service for the upgraded network.

[8] Deutsche Bank Securities inc.
[9] *Id.* at p. 4.

New handsets are needed to take advantage of high-speed data services. However, CDMA2000 handsets are backward compatible with cdmaOne meaning that cdmaOne handsets provide basic voice and lower-speed data connectivity on a CDMA2000 network, and CDMA2000 handsets work on a cdmaOne network, although without access to CDMA2000's advanced services. This backward compatibility enables a seamless transition for customers. For example, as a cdmaOne operator upgrades its network to CDMA2000, existing users can continue to use their cdmaOne handsets without any service interruptions. At a later date, these users may opt to upgrade to a CDMA2000 handset in order to take advantage of enhanced data capabilities. Customers can determine if and when to purchase a CDMA2000 handset, and the operator does not need to undertake the massive marketing and logistical challenges of prompting customers to purchase new handsets.

Similar to the cdmaOne path, the migration from TDMA to CDMA2000 requires only a single technological step. TDMA and CDMA2000 share the same ANSI-41 core network, which allows migration with minimal disruption to existing users. In addition, the common core network provides significant cost savings to the operator. Because a high percentage of TDMA wireless carriers operate in the 800 MHz band, the CDMA2000 solution is currently the best option available to TDMA operators who want to pursue an in-band migration path.

Rather than acquire new spectrum and build out an entirely new network, GSM carriers also have an economical option to migrate to 3G using CDMA2000. GSM operators can seamlessly integrate this new solution by leveraging their existing GSM/GPRS core network equipment while enhancing the data capabilities and spectral efficiency of their radio access with commercially available CDMA2000 infrastructure. Using the GSM operator's existing spectrum, GSM1x offers the operator increased voice and data capacity, supporting peak data speeds currently of up to 153 kbps in a 1.25 MHz channel. Additionally, the GSM1x solution will seamlessly support the CDMA2000 1xEV-DO air interface, allowing peak data rates of 2.4 Mbps. The GSM1x solution will also support SMS and position location. GSM1x terminals utilize a standard GSM Subscriber Identity Module (SIM) and are subject to standard GSM authentication. As a

result, operators will be able to offer global roaming and service transparency between CDMA2000 1X and GSM networks without compromising their current infrastructure.

A number of leading manufacturers have committed to supporting this new solution for GSM carriers, and field trials of GSM1x began in December 2002.

IV. CONCLUSION

The CDG believes that the Commission should pay close attention to the significant strides being made in the deployment of 3G services in the United States and elsewhere. It should take note that this market will continue to flourish so long as flexible use spectrum policies are maintained. The CDG also believes that CDMA2000 will serve to lead future development in advanced wireless services because of its efficient use of bandwidth, clear and seamless migration paths, and overall cost-efficiency.

Respectfully submitted,

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Annex 1
CDMA2000 Deployments

Country	Operator	CDMA2000 1X Commercial Launch	CDMA2000 1xEV-DO Commercial Launch
Australia	Telstra	December 2002	
Brazil	Telesp Celular	December 2001	
Brazil	Telefonica Celular	April 2002	
Canada	Bell Mobility	February 2002	
Canada	Telus Mobility	June 2002	
Canada	Aliant Mobility	November 2002	
Canada	MTS	November 2002	
Chile	Smartcom PCS	July 2002	
Colombia	EPM Bogota	October 2002	
Ecuador	BellSouth Ecuador	December 2002	
India	Tata Teleservices	November 2001	
Israel	Pelephone	September 2002	
Japan	KDDI	April 2002	
Mexico	Iusacell	January 2003	
Moldova	Interdnestrcom	September 2002	
New Zealand	Telecom New Zealand	July 2002	
Panama	BellSouth Panama	December 2002	
Puerto Rico	Verizon Wireless	February 2003	
Puerto Rico	Centennial Wireless	April 2002	
Romania	Zapp Mobile (Telemobil)	December 2001	
Russia	Delta Telecom	December 2002	
S. Korea	KTF	May 2001	May 2002
S. Korea	SK Telecom	October 2001	January 2002
S. Korea	LG Telecom	May 2001	
United States	Cellular South	September 2002	
United States	Leap Wireless	December 2001	
United States	Metro PCS	February 2002	
United States	US Cellular	November 2002	
United States	Sprint PCS	August 2002	
United States	Verizon Wireless	January 2002	
United States	Monet Mobile	October 2001	October 2002
Venezuela	Movilnet (CANTV)	November 2002	
Venezuela	Telcel	November 2002	